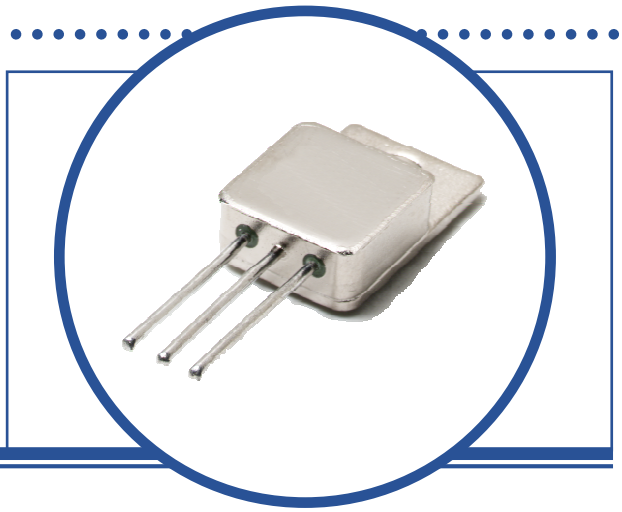
SILICON CARBIDE (SiC) SCHOTTKY DIODE

TT electronics
Semelab Limited

SML10SIC06YC

- Hermetic Metal TO-257AA Package.
- Semelab's Silicon Carbide (SiC) Schottky diodes exhibit low forward voltage and superb high temperature performance.
- Suitable for high-frequency hard switching applications, where system efficiency and reliability are paramount.
- No reverse recovery time due to absence of minority carrier injection.
- Screening Options Available.



ABSOLUTE MAXIMUM RATINGS (Per Diode, T_C = 25°C unless otherwise stated)

V_R	DC Reverse Voltage	600V
V_{RRM}	Repetitive Peak Reverse Voltage	600V
I_F	DC Forward Current (T_J = 175°C)	10A
I_{FRM}	Repetitive Peak Forward Current (1)	67A
I_{FSM}	Surge Peak Forward Current (2)	250A
P_D	Total Power Dissipation at	100W
	Derate Above 25°C	0.5W/°C
T_J	Junction Temperature Range	-55 to +225°C
T_{stg}	Storage Temperature Range	-55 to +225°C

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case	2.0	°C/W

Notes
(1) T_c = 25°C, T_p = 10ms, Half Sine Wave, D = 0.3
(2) T_c = 25°C, T_p = 10µs

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ELECTRICAL CHARACTERISTICS (Per Diode, T_C = 25°C unless otherwise stated)

Static Characteristics

Symbols	Parameters	Test Conditions	Min.	Typ.	Max.	Units
V_F	Forward Voltage	I_F = 10A		1.5	1.8	V
		T_J = 175°C		2.0	2.4	
I_R	Reverse Current	V_R = 600V		10	50	µA
		T_J = 175°C		20	200	

Dynamic Characteristics

Q_C	Total Capacitive Charge	V_R = 600V, I_F = 10A $\delta i/\delta t$ = 500A/µs		25		nC
C	Total Capacitance	V_R = 1.0V, f = 1.0MHz		480		pF
		V_R = 200V, f = 1.0MHz		50		
		V_R = 400V, f = 1.0MHz		42		

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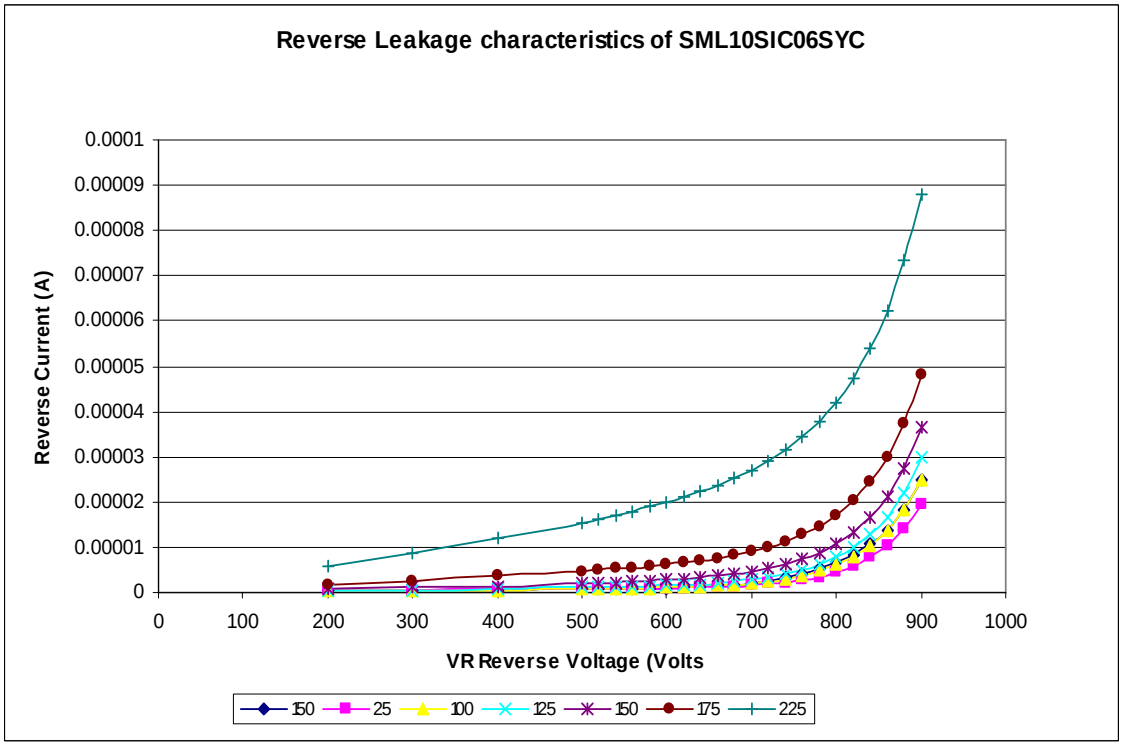
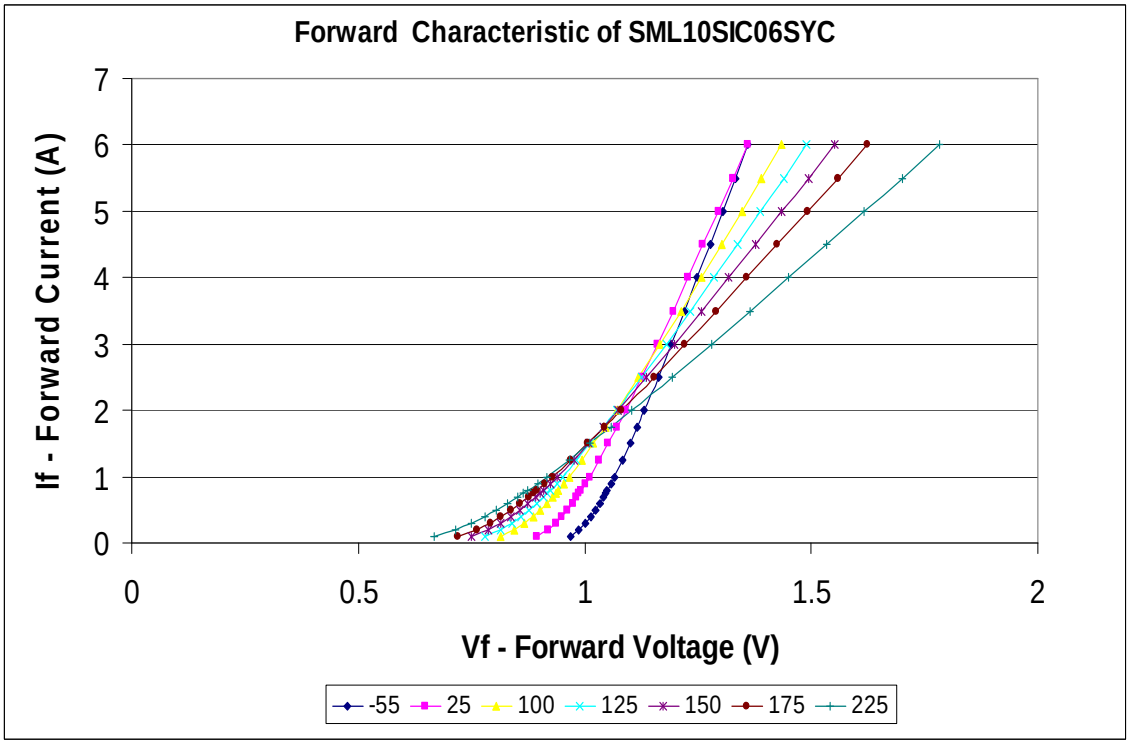
Typical Performance Over Temperature Range





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SiC Schottky Diode, no minority carrier recombination thus zero reverse recovery. Recovery time shown is due to a small junction capacitance charge and is independent of junction temperature

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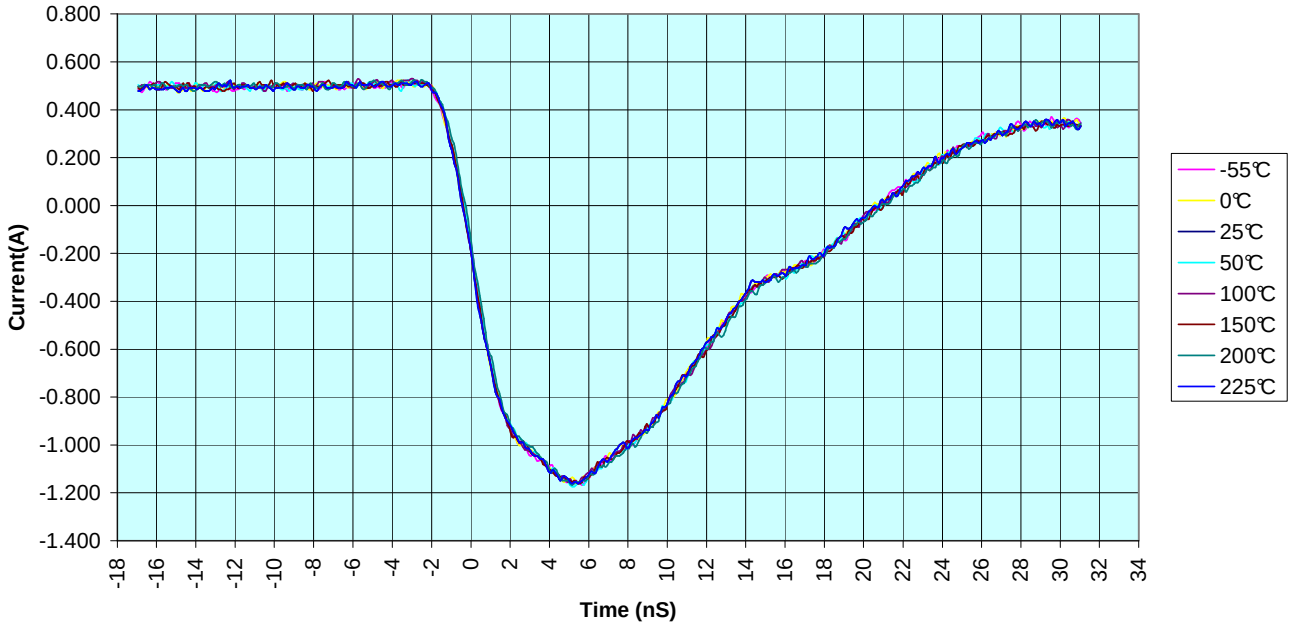
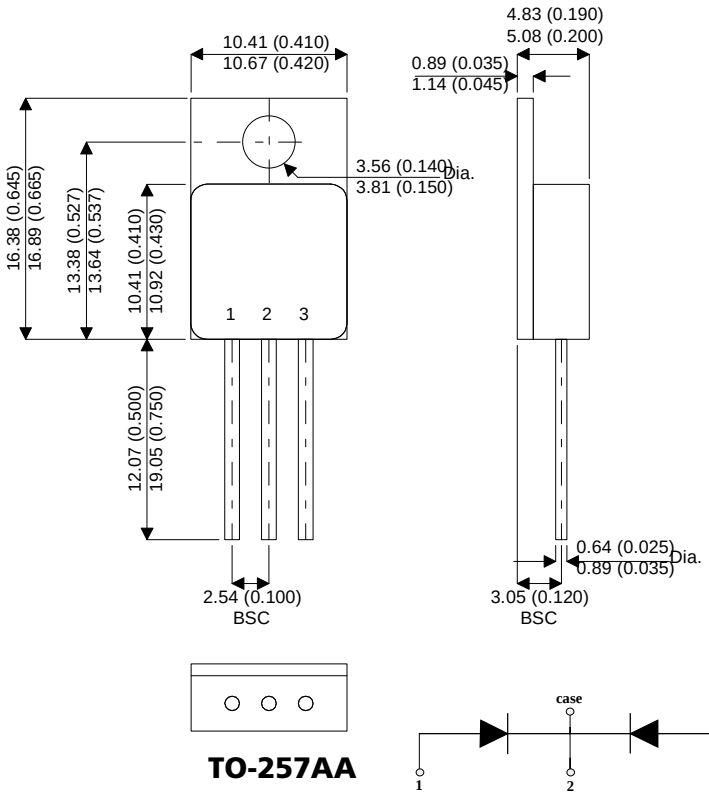
Equivalent Reverse Recovery Time Device

I_F=500mA, I_R = 1A, I_{RR}=250mA



MECHANICAL DATA

Dimensions in mm (inches)



TO-257AA

Pin 1 – Anode 1 Pin 2 – Case / Common Cathode Pin 3 - Anode 2